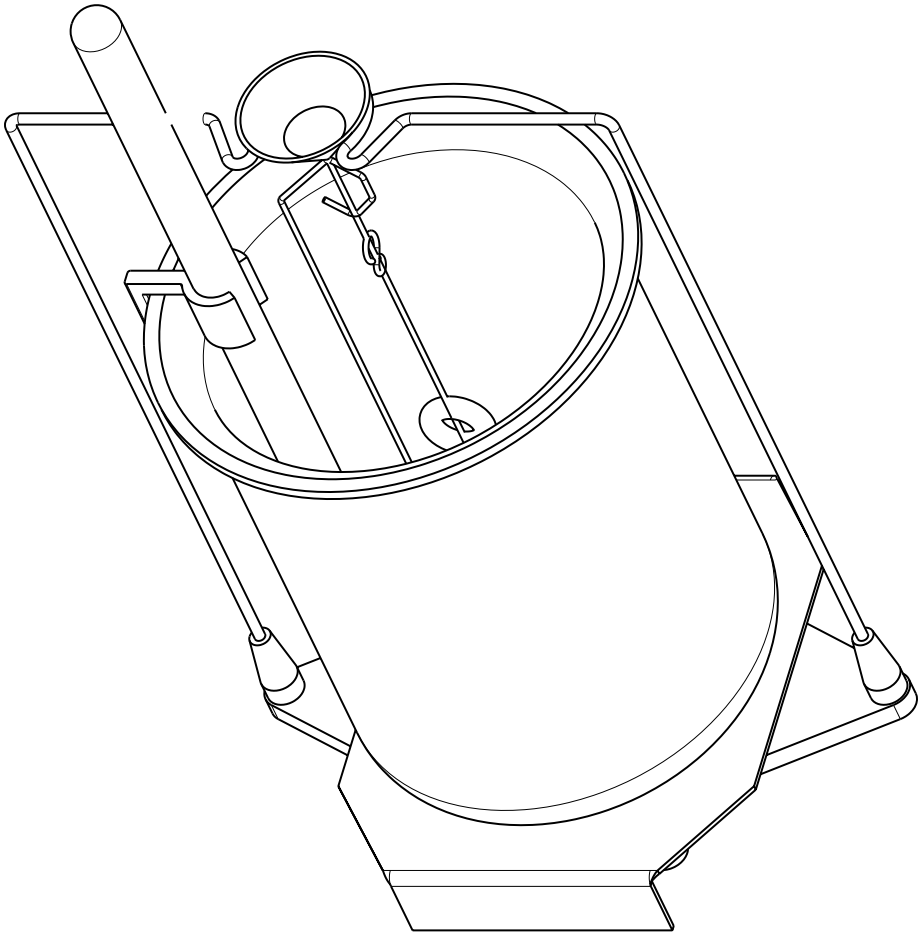
Precisa

■ The Balance of Quality ■

Accessories Series EP / ES / XT / XB

Density determination set
Part no.: 350-8636 / 350-8637



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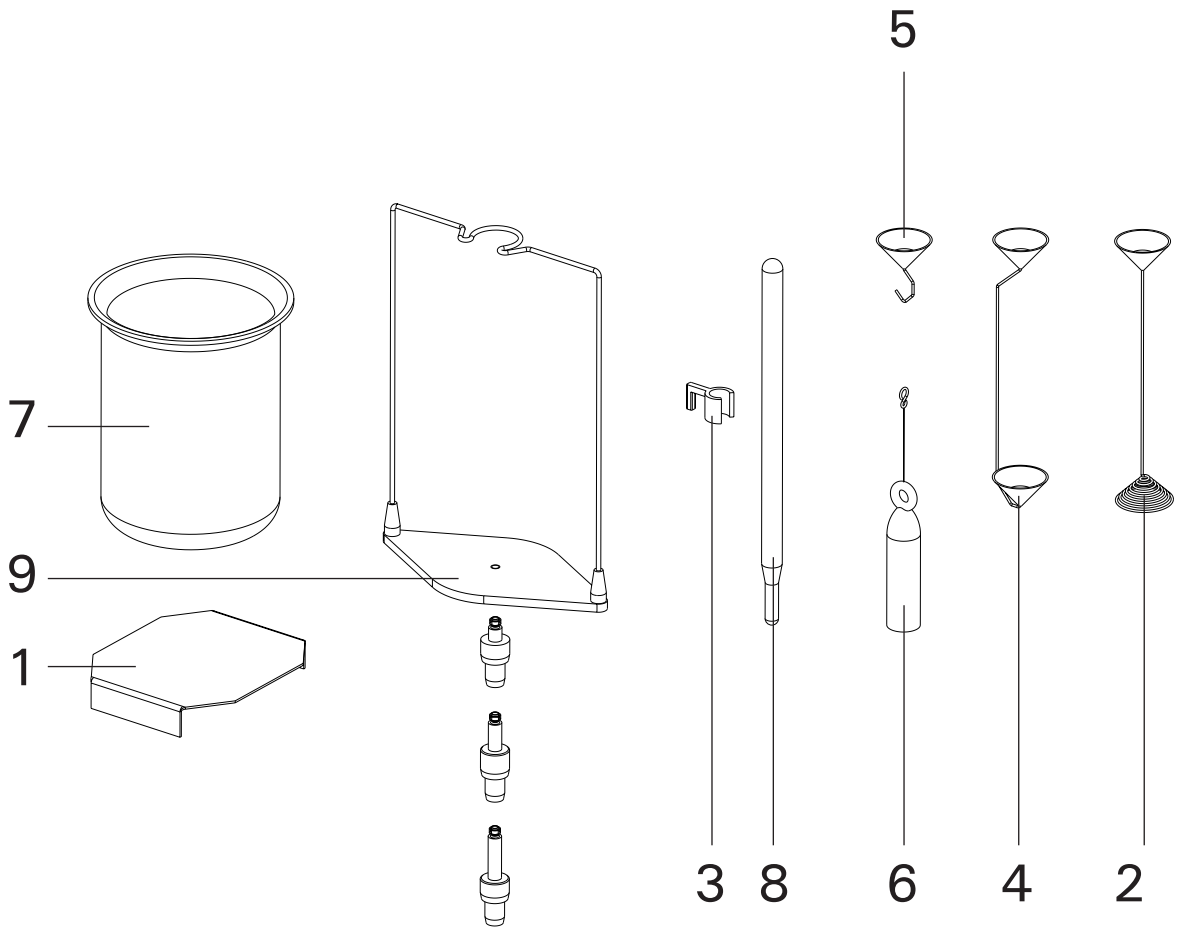
1. Density kit 350-8636 / 350-8637



Key-No.	Part-No.	Description
1	350-2066	Pedestal
2	350-7194	Stopper for samples with density < 1 g/cm^3
3	350-4024	Holder
4	350-7052	Double cup
5	350-7053	Cup with hook; **only included in density set 350-8636**
6	350-7054	Rumann'scher body; **only included in density set 350-8636**
7	350-7055	Glass beaker
8	350-7056	Thermometer
9	350-7304	Support frame

2. Remarks on density determination

2.1 Methods of determination

Using the "Density" operating program you can determine the density of solids and liquids. For this, you can choose from various methods of determination :

- „MODE LIQUID" : Density of a liquid (only with density kit 350-8636)
- „MODE SOLID IN AIR" : Density of a solid
- „MODE SOLID POROUS" : Density of a porous solid
- „MODE SOLID ON BOTTOM" : Density of a solid with vessel on scale pan

2.2 Calculating the density index

The density index gives the percentage difference between two densities:

Index = (Density_1 - Density_2) / Density_1 * 100%

Here the two densities are employed in such a way that Density_1 is always >= Density_2.

Either two densities are compared one after the other or the last density determined is compared with the reference density entered.

3. Setting the density program

Select the density program in the application menu and adjust the program to suit your requirements.

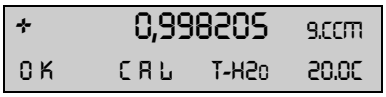
(For more information on how to get into the application menu and on making the adjustments please consult the balance Operating Instructions.)

• **SETUP APPLICATION**		
DENSITY	MODE SOLID ON BOTTOM MODE **SOLID IN AIR** MODE LIQUID MODE SOLID POROUS	*Solid with vessel on scale pan* *Solid* *Liquid* *Porous solid*
	INDEX ON/**OFF**	*Index calculation on/off*
	REFERENCE **8.000**	*Reference density for the index calculation in g/cm3 (only used when REFERENCE<>0.0)*
	TIMEBASE **2.0**	*Time base for repetition in seconds (only used when TIMEBASE <> 0.0)*
	REF. DENSITY **0.998205**	*Density of the liquid used for measurement (Factorysetting water at 20°C)*
	TEMPERATURE **20 C**	*Temperature of the water used in the measurement in °C (The REF. DENSITY is calculated accordingly)*

4. Starting and initialising the density program

Briefly press «↻» (in XB «**MODE**») to get to the density program.

If "Liquid" mode is set, it will jump directly into density determination mode. In all other modes the display will appear as follows :



Current density of the measuring liquid
Functions (for the series XB press «**REF**»)

Description of the functions :

„OK“ :	*Accept density of measuring liquid* *==> Proceed with corresponding density determination*
„CAL“ :	*Determine density of measuring liquid* *(See 5. Density of a liquid „Mode liquid“ (only density kit 350-8636))*
„T-H2o 20.0C“ :	*Set reference density of water* *(Currently set at : 20.0°C)*
„T-H2o ---C“ :	*Set reference density of water* *(currently not defined))*

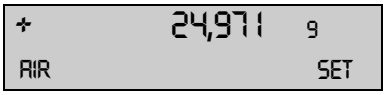
5. Density of a liquid „Mode liquid“ (only density kit 350-8636)

This method determines the density of a liquid. For this a glass body with a volume of 10 cm^3 or 100 cm^3 is used.

5.1 Procedure

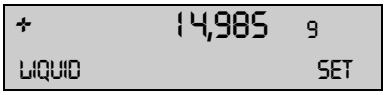
1. Tare.

2. Suspend the glass body from the hook under the single cup and press «**SET**» (XB «**REF**») (Fig. 1).



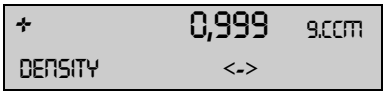
As soon as the value is stable, it is stored and displayed for 2 seconds.

3. Place container with liquid on the balance and immerse the glass body (The glass body must not touch the bottom) and press «**SET**» (XB «**REF**») (Fig. 2).



As soon as the value is stable, it is stored and displayed for 2 seconds.

4. Display shows the density of the liquid (if within the range 0.5 . . . 2.0g/cm3).



5. Change the density index on the display with «**<->**» (XB «**REF**») (if INDEX ON).

6. Tare -> balance again to gram display and ready for next determination.

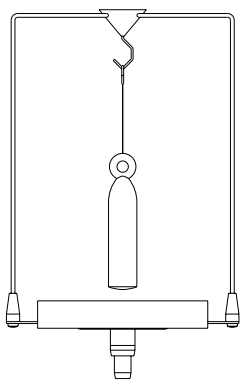


Fig. 1

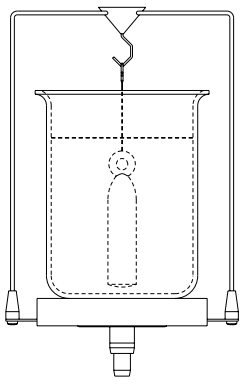


Fig. 2

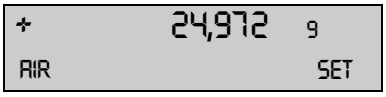
6. Density of a solid „Mode solid in air“

This method determines the density of a solid. For this, the double cup is required. The thermometer serves for monitoring the temperature of the measuring liquid in the container.

6.1 Procedure

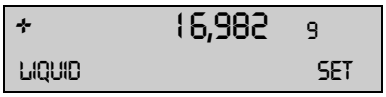
1. Tare.

2. Place body in the upper cup and press «**SET**» (XB «**REF**») (Fig. 1).



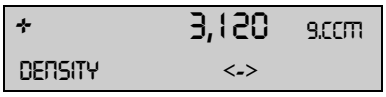
As soon as the value is stable, it is stored and displayed for 2 seconds.

3. Place body in the lower cup and press «**SET**» (XB «**REF**») (Fig. 2).



As soon as the value is stable, it is stored and displayed for 2 seconds.

4. Display the density of the solid (if in the range 0.1 . . . 25.0g/cm3).



5. Change the density index on the display with «**<->**» (XB «**REF**») (if INDEX ON).

6. Tare -> balance again to gram display and ready for next determination.

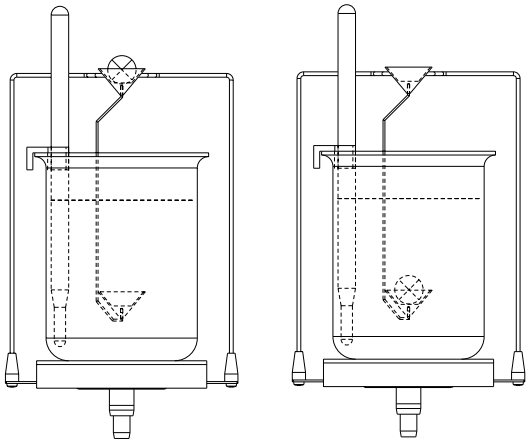


Fig. 1

Fig. 2

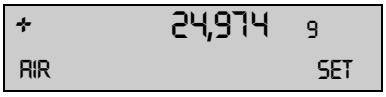
7. Density of a porous solid „Mode porous solid“

This method determines the density of a porous solid. For this, the double cup is required. The thermometer serves for monitoring the temperature of the measuring liquid in the container.

7.1 Procedure

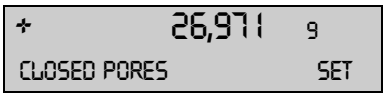
1. Tare.

2. Place porous solid in upper cup and press «**SET**» (XB «**REF**») (Fig. 1).



As soon as the value is stable, it is stored and displayed for 2 seconds.

3. Place body with closed pores in upper cup and press «**SET**» (XB «**REF**») (Fig. 2).

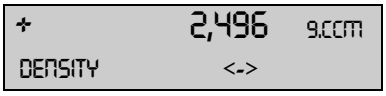


As soon as the value is stable, it is stored and displayed for 2 seconds.

4. Place porous body in the lower cup and press «**SET**» (XB «**REF**») (Fig. 3).

As soon as the value is stable, it is stored and displayed for 2 seconds.

5. Display shows density of the solid body (if in the range 0.1 . . . 25.0g/cm3).



6. Tare -> balance again to gram display and ready for next determination.

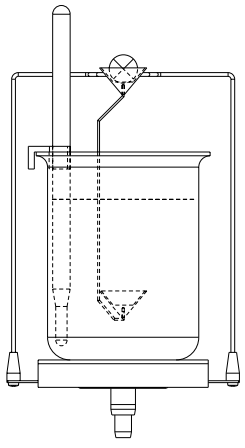


Fig. 1

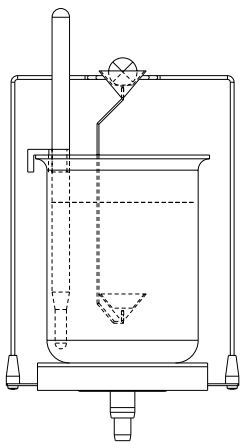


Fig. 2

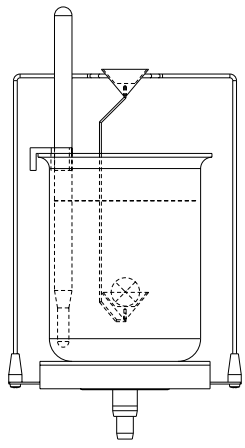


Fig. 3

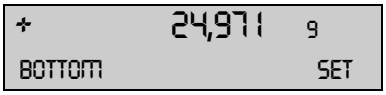
8. Density of a solid „Mode solid on bottom“

This method also determines the density of a solid; no ancillary equipment is required, however. The thermometer serves to monitor the temperature of the measuring liquid.

8.1 Procedure

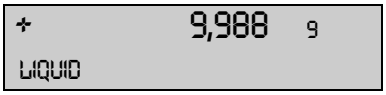
1. The reference liquid (water) with temperature adjusted is poured into a container, placed on the balance pan and tared (Fig. 1).

2. Place body in the container (rest on floor) and press «**SET**» (XB «**REF**») (Fig. 2).



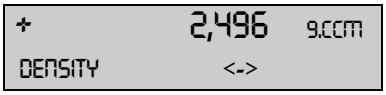
As soon as the value is stable, it is stored and displayed for 2 seconds.

3. Raise body so that it no longer rests on the floor but is still fully immersed in the measuring liquid and press «**SET**» (XB «**REF**») (Fig. 3).

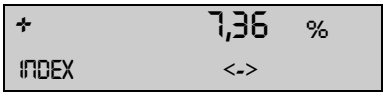


As soon as the value is stable, it is stored and displayed for 2 seconds.

4. Display shows density of the solid (if in the range 0.1 . . . 25.0g/cm3).



5. Change the density index on the display with «**<->**» (XB «**REF**») (if INDEX ON).



6. Tare -> balance again to gram display and ready for next determination.

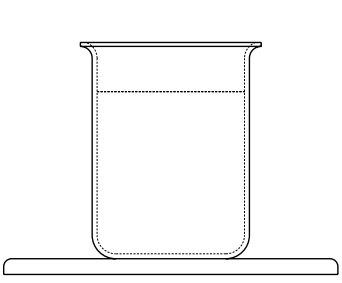


Fig. 1

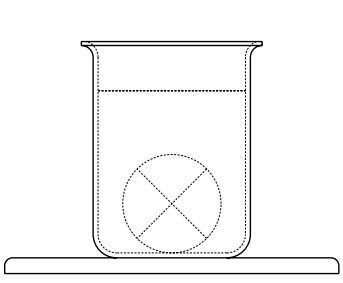


Fig. 2

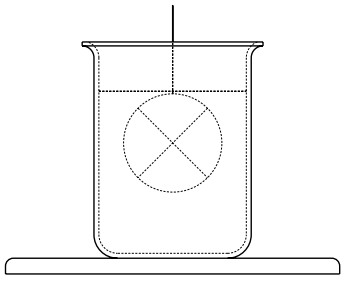


Fig. 3